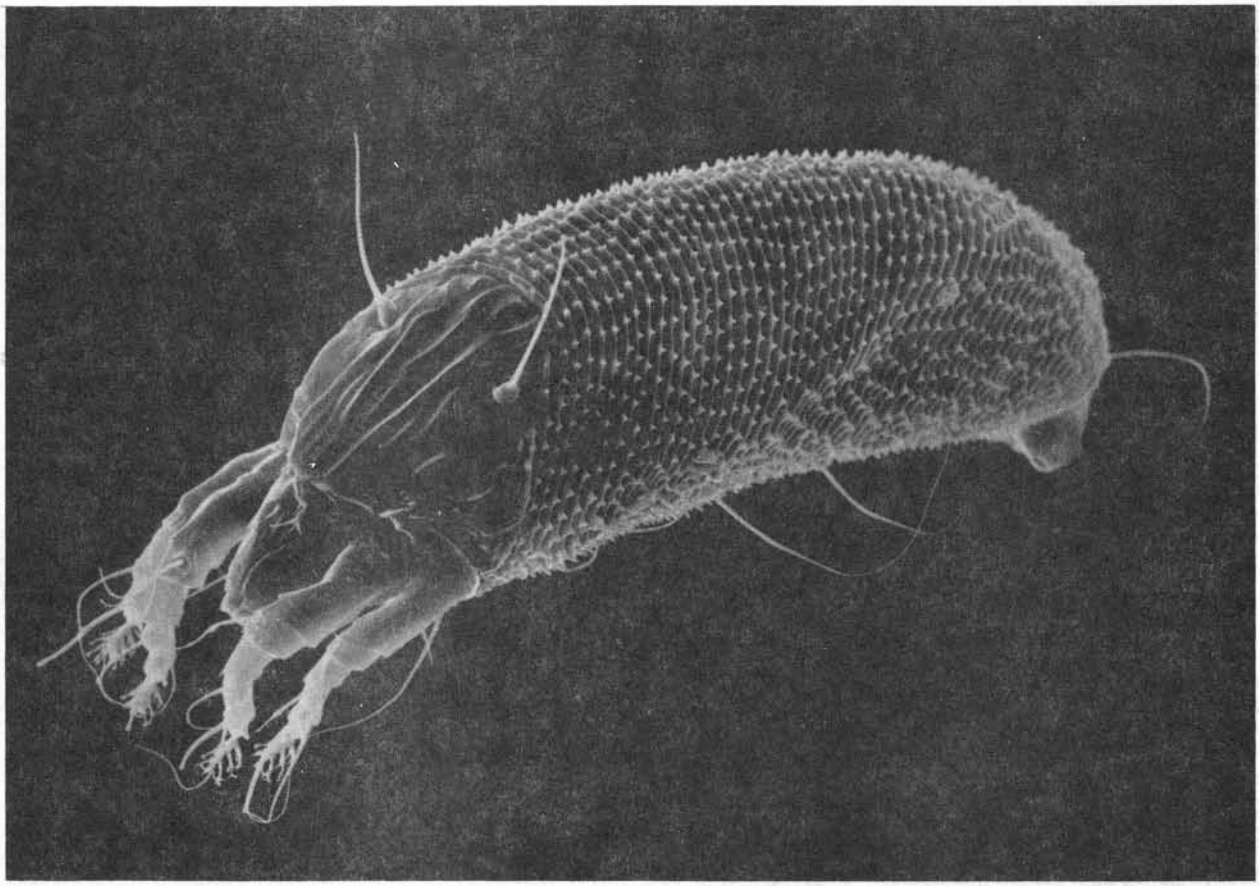
CALIFORNIA PLANT PEST and DISEASE REPORT

Volume 3 Number 5
October 1984

California Department of Food and Agriculture 1220 N Street Sacramento California 95814



Scanning electron micrograph of Acalitus calycophthirus female, an eriophyid mite. (SEM original at 780X by Tokuwo Kono)

CHERRY LEAF SPOT IN CALIFORNIA

Jeanenne B. White and Carl M. Lai

Severe infections of cherry leaf spot, also known as "yellow-leaf" and "shot-hole disease," have occurred on sweet cherry trees in Humboldt and Mendocino county coastal areas this year. The disease, caused by the fungus Coccomyces hiemalis Higgins, has never been reported in the major sweet cherry-growing areas of California's inland valleys.

The host range of the fungus includes both sweet and sour cherries (Prunus avium and P. cerasus). Closely related species of Coccomyces occur on mahaleb cherry and plum.

Symptoms of the disease first appear during the latter part of May. Minute dark purple spots occur on upper leaf surfaces, enlarging to form irregular, sometimes angular necrotic lesions (Fig. 1). The center of each lesion may drop out causing a shot-hole effect. Affected leaves may turn yellow and fall prematurely early in the season. A white growth develops on the underside of infected spots following heavy dews or rains. Reduction in fruit set, fruit size, and shoot growth, and production of dwarfed fruit buds and flowers may result from infections. Eventual defoliation of entire trees may occur following severe infections during wet spring weather. Young cherry trees are especially susceptible and may be completely defoliated by mid-summer.

The fungus invades the tree through the leaf stomata, producing a stroma consisting of intercellular septate mycelium between the leaf epidermal and mesophyll tissues. Fruits, pedicels, and petioles also may become infected. Dark acervuli (asexual fruiting structures) are formed on the surface of the mycelial stroma, and elongated, hyaline, curved conidia emerge through the lower leaf epidermis as a white creamy mass. The one or two-celled conidia are 45 to 60 um long by 2.4 um wide.

The fungus overwinters on fallen leaves under the trees, where in the spring, apothecia (sexual fruiting structures) are produced on the same stromata as the acervuli. The apothecia contain the asci (spore sacs) and ascospores (30 to 50 um in length) which are forcibly ejected during periods of dampness and are carried by splashing water or air currents to young new foliage. All primary infections are from ascospores (Coccomyces stage) developed on fallen leaves, while most secondary infections occur from conidia (Cylindrosporium stage), transmitted from leaf to leaf prior to leaf-fall (see diagram of fungus life cycle, Fig. 2).

J.B. White is an Agricultural Biological Technician and C.M. Lai is a Plant Pathologist with the analysis and Identification Unit, CDFA, in Sacramento.

References

Anderson, Harry W. 1956. Diseases of Fruit Crops. McGraw-Hill Book Co. New York.

Wilson, Edward F., and Ogawa, Joseph M. 1979. Fungal, Bacterial and Certain Nonparasitic Diseases of Fruit and Nut Crops in California. Div. of Agric. Sciences. Univ. of Calif.

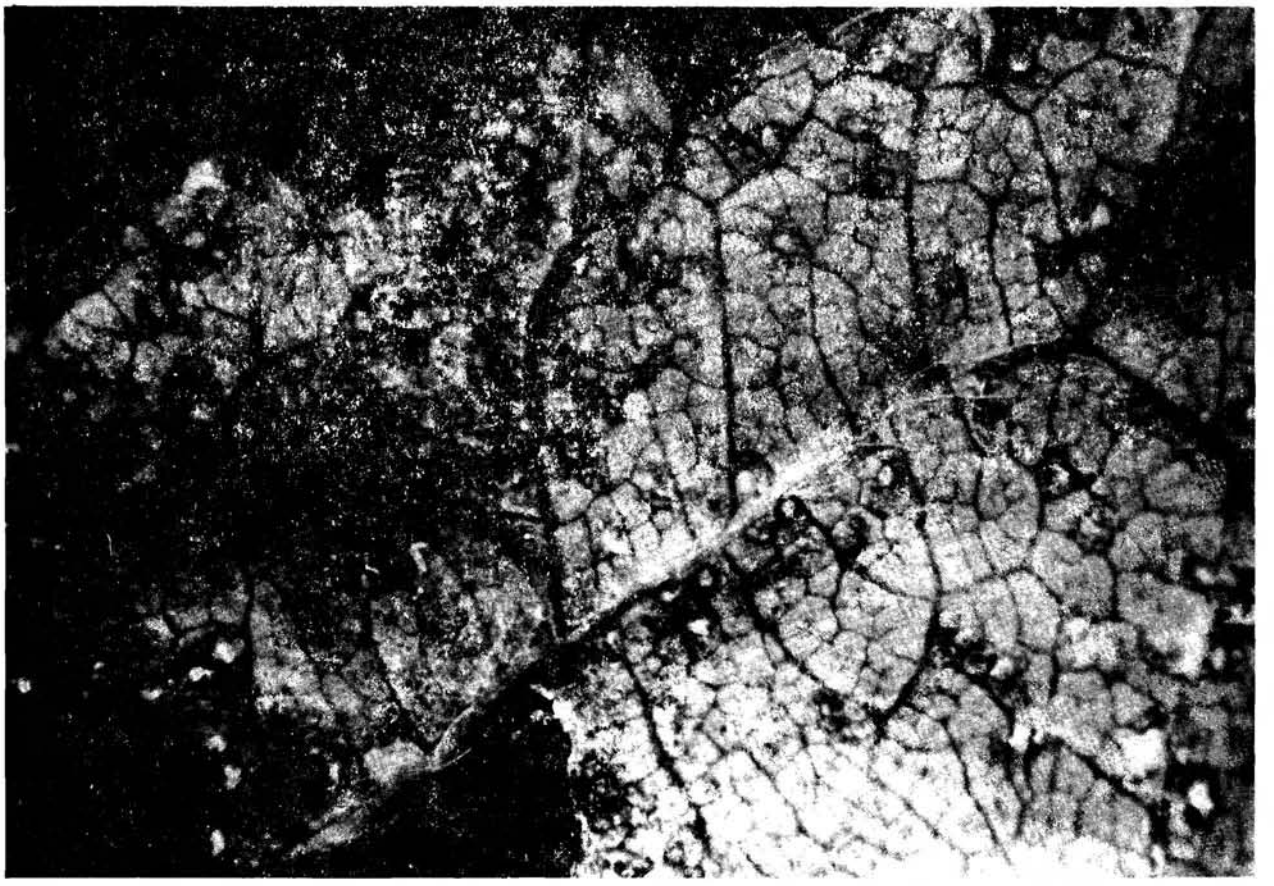
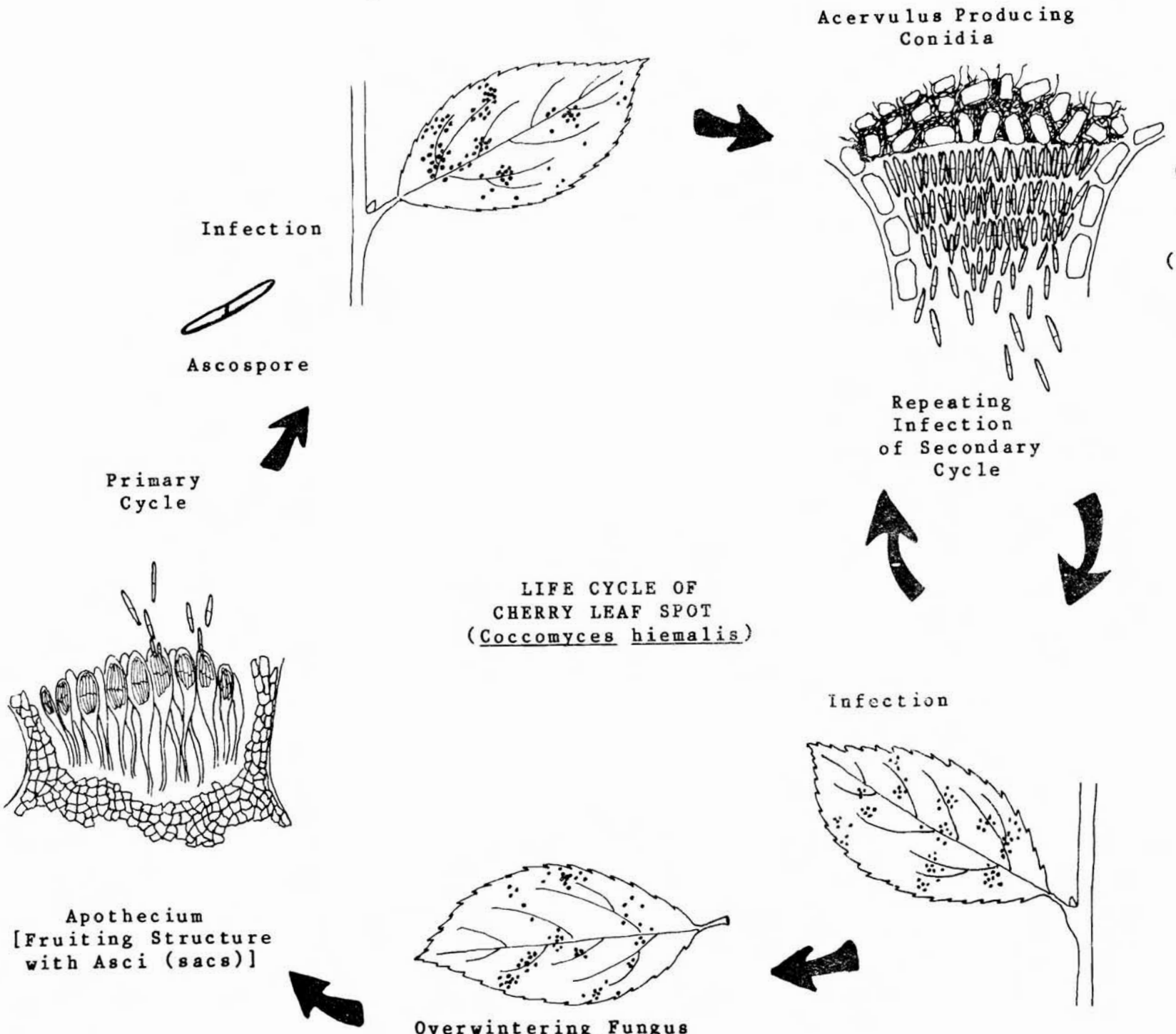


Fig. 1. Necrotic angular lesions of Coccomyces hiemalis (Cylindrosporium stage) on sweet cherry.

TWO SCIENTISTS RECEIVE AWARDS

Dr. Tom Matsumoto of the plant pathology laboratory and Dr. Robert Dowell of the exotic pest analysis staff were the recipients of beautiful engraved gold wrist watches presented by Director Berryhill October 11 at the Entomology Conclave in Sacramento. These Superior Achievement Awards were presented in recognition of their significant contributions to CDFA's pest prevention programs. Dowell was commended for his preparation of Environmental Assessments and organization of scientific Advisory Panels for apple maggot, Japanese beetle, and five exotic fruit fly pests within the last year. Matsumoto was recognized for his discovery of the existence of the kernel smut fungus of rice in California, and for his initiation of surveys and laboratory tests for that disease and the related Karnal bunt of wheat.



LIFE CYCLE OF
CHERRY LEAF SPOT
(Coccomyces hiemalis)

Fig. 2.

SQUASH LEAF CURL VIRUS UPDATE

D. Mayhew, R. Gill and K. Wiese

Recent observations in San Diego County indicate that the squash leaf curl virus, first reported in 1977 in Riverside and Imperial counties (Flock and Mayhew, 1981) is spreading and may be carried by a new vector.

Squash leaf curl (SLC) infects members of the family Cucurbitaceae. Symptoms on watermelon, cucumber, cantaloupe, casaba, and Crenshaw melon include mild chlorosis, slight stunting and some vein clearing. Cucurbits with a long growing season, such as banana and Hubbard squash and pumpkin, are most severely damaged. On these hosts, SLC causes severe stunting of the new growth and often death of the plant. New shoots bend upward, the margins of the leaves curl upward and the veins are thickened. Interveinal tissue may become chlorotic or mottled in conjunction with vein clearing or green vein banding. Often, blossoms fail to develop or set fruit, or small and distorted fruit develop. Enations frequently form on the underside of the leaves (Fig. A) on banana squash, sugar pumpkin and Mediterranean squash.

Early plantings of other squash, such as scallops, yellow crookneck and zucchini, are also severely affected. Plants that are not killed usually produce a crop when the weather cools. Cool temperatures seem to arrest the activity of the known SLC vector, the sweet potato whitefly (Bemisia tabaci).

Subsequent investigations showed SLC to be a geminivirus. This virus group is characterized by small (18-20 nm), apparently icosahedral nucleoprotein particles occurring in pairs (Fig. B).

Until recently, SLC was thought to occur only in desert agricultural sections of southeastern California and adjacent areas of Arizona and Mexico. This summer, however, SLC was reported in the coastal county of San Diego. Pumpkins with leaf curl, enations, malformation of the leaves and geminivirus particles were found in the Ramona region. This is the first evidence of SLC outside the originally reported distribution area.

Equally important is the possibility of additional SLC vectors. Previously, the sweet potato whitefly was the only known vector of SLC. San Diego County is not a natural habitat for this

---

D. Mayhew is a Plant Pathologist, R. Gill is an Entomologist and K. Wiese is an Agricultural Inspector with the Analysis and Identification Unit, CDFA, in Sacramento.

whitefly. Field investigations were carried out to identify alternate vectors. Entomologist Ray Gill has now implicated the greenhouse whitefly (Trialeurodes vaporariorum) and a garden leafhopper (Empoasca sp.) as possible vectors of SLC.

REFERENCE

Flock, R.A. and Dennis E. Mayhew. 1981. Squash leaf curl, a new disease of cucurbits in California. Plant Disease 65:75-76.

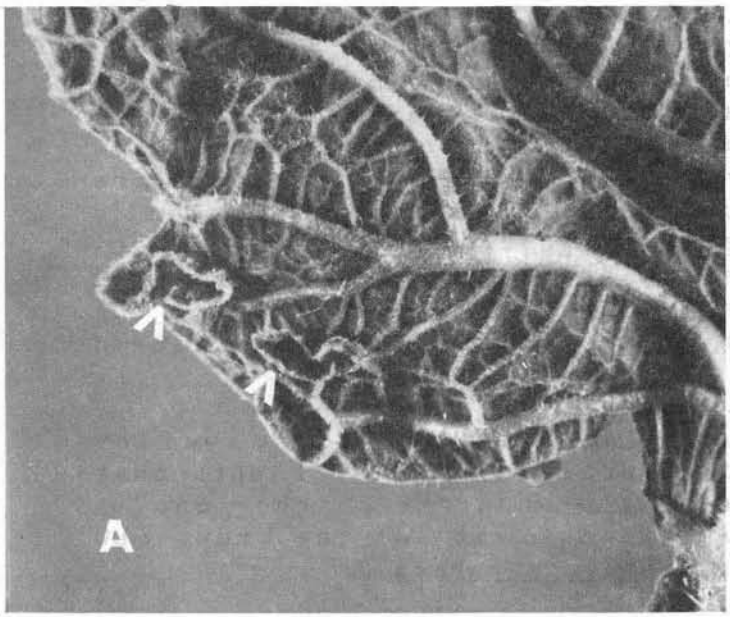


Fig.A. Enations (arrows) on leaves of pumpkin infected with squash leaf curl virus.

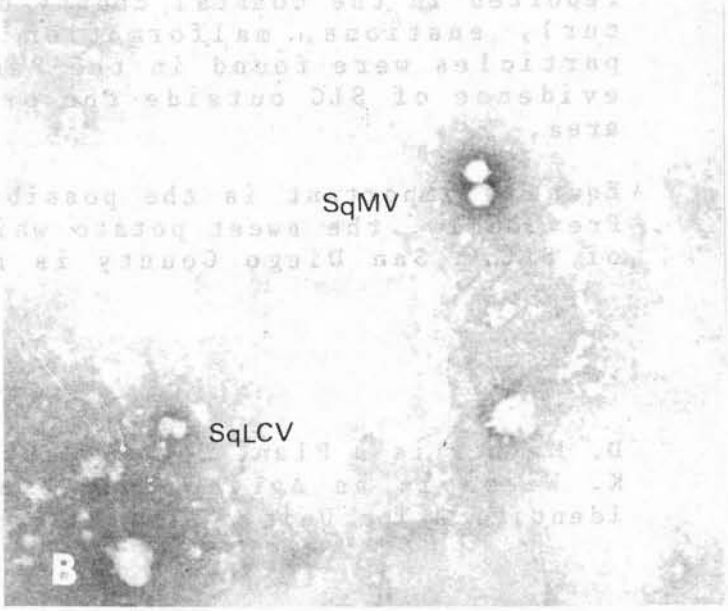


Fig.B.Negatively stained leaf dip preparation of pumpkin leaves infected with squash leaf curl and squash mosaic viruses. SqMV = squash mosaic virus particles. (c. 30nm) SqLCV = squash leaf curl virus (c. 19nm).

NOMENCLATURAL QUIZ!

Do you know the answers to these questions?

1. Give all the papers with redescriptions of *Meloidogyne incognita* published during the last 15 years.
2. In what genus is now *Criconemoides goodeyi*?
3. Can you name a new taxon "*Dolichorhynchus indicus*" without creating an homonymy?
4. Where can you find a SEM picture of *Pratylenchus sefaensis*?
5. What species are currently included in *Tylenchorhynchus*?
6. What species have been proposed as synonyms of *Anguina agrostis*?
7. Who is the author of *Helicotylenchus ussuriensis*?
8. Give the list of all species names ever proposed in *Tylenchus*.
9. Is *Xiphinema italiae* currently considered a valid species?
10. What were the species in the old genus *Anguillulina*?

If you can answer all ten questions, bravo! You have an encyclopedic knowledge of nematode nomenclature.

If not, you need:

NEMAS
A nomenclatural compilation of plant nematodes
prepared by Renaud Fortuner
distributed by Society of Nematologists

NEMAS is a computerized datafile that contains all the information about the names of plant nematodes, their taxonomic status, and references to studies of their morphology. NEMAS is continuously updated; it can be searched either by species or by genus.

NEMAS is accessible from any computer or from a dumb terminal with a modem (phone connection) via TELENET and other public data networks. Rates are low, $13-15 per hour plus 0.5-2 cents per CPU second.

Open an account today!
Write to: Renaud Fortuner
California Department of Food and Agriculture
Analysis and Identification Unit
(Nematology Laboratory)
1220 N Street, Sacramento, CA 95814, USA

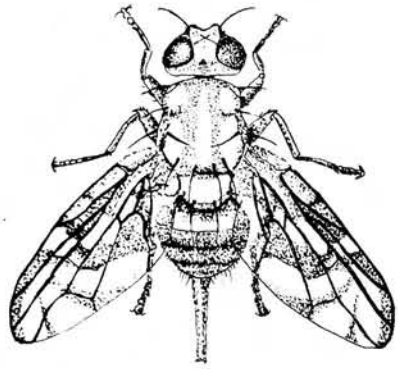
THIS IS THE LATE EDITION!

If you think some of the "news" in this issue of the California Plant Pest and Disease Report is a bit stale, you can blame it on "Compu-Pro," our laboratory's computer. A break-down that happened when we were about ready to go to press took about three weeks to correct, so here we are, nearly a month late. We promise to be back on schedule in November, if Compu-Pro will cooperate.

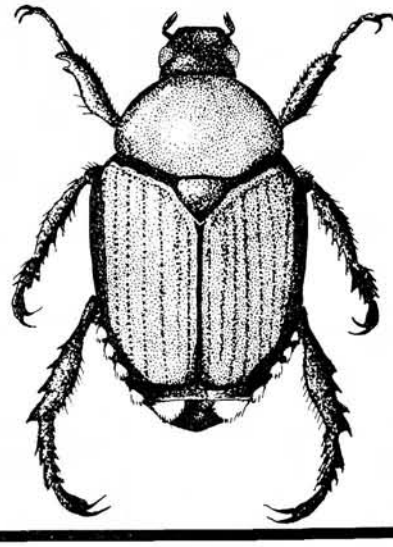
The Editors

Correspondence should be addressed to the appropriate member of the editorial staff of the California Plant Pest and Disease Report (C.P.P.D.R.):

Calif. Pl. Pest and Dis. Rept. Vol. 3, No. 5:103-130 was issued on Oct. 31, 1984.



Entomology Highlights



ORIENTAL FRUIT FLY, Dacus dorsalis -(A)- Substantial numbers of this serious fruit pest have been collected in the greater Los Angeles area during this period. An active infestation is clearly indicated and eradicative efforts are under way. Two adult flies are also on record from San Diego County. To date (August 27) this year, a total of 51 flies have been trapped in the two counties, and one larval site has been found in Los Angeles County. The following chart outlines the pertinent data associated with each find:

Location	County	Date	Collector	Stage & Number
Westchester	LA	7/6	R.Inocencio	2 A ♂
Highland Park	LA	7/6	M.Quaglia	1 A ♂
Westchester	LA	7/9	R.Inocencio	3 A ♂
Westchester	LA	7/11	R.Inocencio	1 A ♂
Carson	LA	7/17	R.Clark	1 A ♂
Pico Rivera	LA	7/23	W.Awad	1 A ♂
Westchester	LA	7/31	R.Inocencio	1 A ♂
Olivenhein	SD	8/2	L.Guidry	1 A ♂
Pasadena	LA	8/2	K.Pearce	1 A ♂
Westchester	LA	8/7	R.Inocencia	1 A ♂
Westchester	LA	8/8	Moreo/Mendes	5 A ♂
Westchester	LA	8/9	Moreo/Mendes	1 A ♂
Pasadena	LA	8/10	M.Azhar	1 A ♂
Westchester	LA	8/10	Moreo/Mendes	7 A ♂, 5 A ♀
Westchester	LA	8/13	R.Penrose	1 A ♀
Westchester	LA	8/14	R.Penrose	10 1, 1 p
Inglewood	LA	8/15	Inocensio/Quintanilla	1 A ♂, 3 A ♀
Pasadena	LA	8/15	K.Pearce	1 A ♂
Inglewood	LA	8/23	M.Kehr	1 A ♀
Inglewood	LA	8/24	N.Quintanilla	1 A ♂
Carson	LA	8/24	L.Godwin	1 A ♂
Inglewood	LA	8/25	Mendes/Jett	2 A ♂

MEDITERRANEAN FRUIT FLY, Ceratitis capitata -(A)- one specimen of medfly has been found in Santa Barbara during this period. The fly was trapped in a Jackson trap in a lemon tree on Aug. 14. Collection was by D. Chang. All body parts were present, the eyes were iridescent and the body was still fresh. Intensive trapping in the area has failed to reveal other flies however.

Medfly has again appeared in Florida. Following is a report which appeared in the Florida Department of Agriculture newsletter "Triology" Volume 23 No. 6 of June, 1984:

> "Four adult flies (3 males, 1 female) were collected from a Jackson trap in a sour orange tree, Citrus aurantium, in the "Little Havana" area of Miami, Dade County, Florida (6/19/84) (G.H. Gwin, collr.) (H.A. Denmark, detr.). Five more adults and 1 larva were subsequently found during late June in the same core area. A quarantine zone was established and trapping was intensified. Ground and aerial spraying was begun as soon as possible. At press time it appears that the infestation has been contained within the regulated area, and prospects appear good for eradication (F.W. Mead)."

WESTERN CHERRY FRUITFLY, Rhagoletis indifferens -(A)- This fly, a possible threat to the California cherry fruit industry, has been found in increasing numbers in northern California over the last few years. This year, adult flies have been trapped at the following locations, all from Siskiyou County:

Location	Date	Collector	No./Specimens
Dunsmuir	7/03	J. Duft	3
Hamburg	6/20	Schriver/Reaby	1
Horsecreek	7/12	D. Reaby	1
Mt. Shasta	7/18	C.Schriver	4
Mt. Shasta	7/09	C. Duft	2
Mt. Shasta	6/29	D. Reaby	1
Mt. Shasta	6/26	D. Reaby	3
Mt. Shasta	6/29	C. Schriver	2
Weed	7/10	C. Schriver	1
Weed	6/20	S. Crossman	1
Yreka	6/15	S. Crossman	1

BLACK CHERRY FRUIT FLY, Rhagoletis fausta -(A)- Another possible chery fruit pest, this species is also being found in the northern part of the State. Three collections have been made at Dunsmuir by J. Duft and D. Reaby and three collections by J. Duft and C. Schriver have been made at Mt. Shasta. The species has been in many of the mountainous regions of California for many years where it is probably native. It feeds primarily on the fruit of Prunus emarginata.

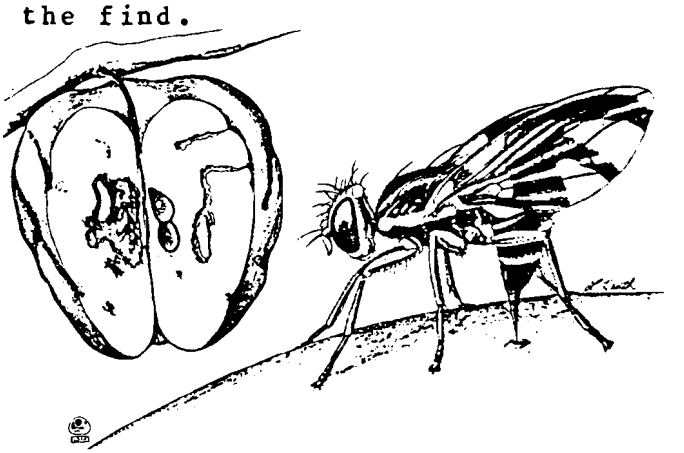
APPLE MAGGOT, Rhagoletis pomonella -(A)- Activity involving this serious apple pest is just getting underway as the adults become active. Total counts of finds will be recounted in the next issue but the following reports by Sewell Simmons cover some of the more important finds.

> "An apple maggot (AM) adult has been trapped for the first time this year in California. The find was made on 7/12/84 near Horse Creek, Siskiyou County. Diane Dealey, Siskiyou County Trapper, made the discovery while servicing an AM trap that had been placed in an apple tree along Horse Creek Road. Horse Creek is

located along Highway 96, approximately 20 miles west of Yreka.

The find is approximately five miles west and six miles east of apple maggot adults trapped last year.

AM trap density is four traps per linear mile of accessible road. CDFA Apple Maggot Program personnel have increased the number of AM traps to 11 in a 1.5 square mile area surrounding the find.



An apple maggot (AM) female adult was trapped on 7/24/84 in Miranda, Humboldt County, approximately thirty miles south of the southernmost 1983 find. The discovery was made by State Apple Maggot Program trapper Harry Vaughn while servicing an AM trap placed in an apple tree, which was one of thirty-plus host trees at the location along Cathy Road. Miranda is located along the "Avenue of the Giants", just east of Highway 101 and south of Humboldt Redwood State Park.

AM trap density is four traps per linear mile of accessible road. All host trees at the site have been treated since the find.

AM have been trapped for the first time in Mendocino and Trinity counties. An apple maggot female adult was trapped August 9, 1984 near Ten Mile River approximately ten miles north of Fort Bragg near Inglenook in Mendocino County. The find was made by State Apple Maggot Program trapper Bruce Potter in an abandoned apple orchard of fifty one trees.

An AM male adult was trapped August 8, 1984 in the Coffee Creek area of Trinity County at the north end of Clair Engle Lake. State Apple Maggot Program trapper Ben Hayter made the discovery while servicing a trap placed in an apple tree. Quarantine lines are being redrawn to include these new finds.

The properties involved have been treated in both counties with Imidan."

GYPSY MOTH, Lymantria dispar -(A)- As of August 23, twenty two gypsy moth adults have been trapped in California this year. The following chart lists the finds for this period:

Location	County	Date	Collector	Number
Fremont	AL	7/03	J. Perry	1
Fremont	AL	7/11	J. Perry	1
El Dorado Hills	ED	7/10	J. Johnson	1
Fremont	AL	7/16	J. Perry	1
San Diego	SD	7/17	B. Taylor	1
Felton	SCR	7/19	W. Kingerlee	1
Felton	SCR	7/20	W. Kingerlee	3
Concord	CC	7/24	K. Anderson	1
Los Angeles	LA	7/27	M. Azhar	1
Felton	SCR	7/27	Sturla/Beavers	2
Felton	SCR	7/31	L. Denny	1
Aptos	SCR	8/17	P. Van Coutren	1
Ventura	V	8/17	K. Bustamante	1
Concord	CC	8/17	P. Greer	1
Berkeley	AL	8/20	L. Weil	2

While surveying properties near this year's gypsy moth trap finds in Fremont, Alameda County, CDFA Economic Entomologist Donna Daniels and County Senior Apricultural Biologist Tad Pieslak found a fragmented gypsy moth egg mass and a pupal skin. The find was made on 8/9/84 at the same Reeder Court residence where two gypsy moth adults were trapped earlier this year.

CDFA Systematic Entomologist Tom Eichlin identified the gypsy moth egg mass on-site but did not find any eggs.

Border station inspections have proven that large numbers of gypsy moth egg masses are being brought into the state. Under our present referral program, all out-of-state travelers and other travelers suspected of having goods or vehicles capable of harboring egg masses are questioned. Those travelers intending to stay in the state are contacted at their destination and their personal belongings are given a thorough reinspection. The following report by Allen Clark summarizes the referral program for this year:

> "This year's GM activity is well under way in the referral program. Inspectors throughout the state are turning up a great number of egg masses on outdoor household articles.
>
> For your information, the effort is contributing to a marked reduction in the numbers of GM trapped this year compared to last year. Credit for the low numbers is shared with people at the border stations, trappers, spraying crews, and those that trace unreported shipments.

With approximately three weeks of GM flight time left, the trapping results for 1983 (to August 11) are 148 and for 1984 (to August 11) the results are 16. Granted these comparisons are general in nature, but things do seem to be looking up. Keep up the good work and...knock on wood!"

While our own gypsy moth exclusion programs seem to be holding their own, we are somewhat disheartened to learn of a major gypsy moth find in the Eugene, Lane County area of central Oregon. The following report by Dick Brown, issued August 31, recounts the serious nature of the Oregon infestation:

"The following gypsy moth trapping information has been obtained from Oregon officials today:

Eugene (city) - 2,500+ moths (west end of city)
24 moths (Amazon Park)

West of Eugene - Several moths (north of Fern Ridge Lake (RV), south of Cheshire)

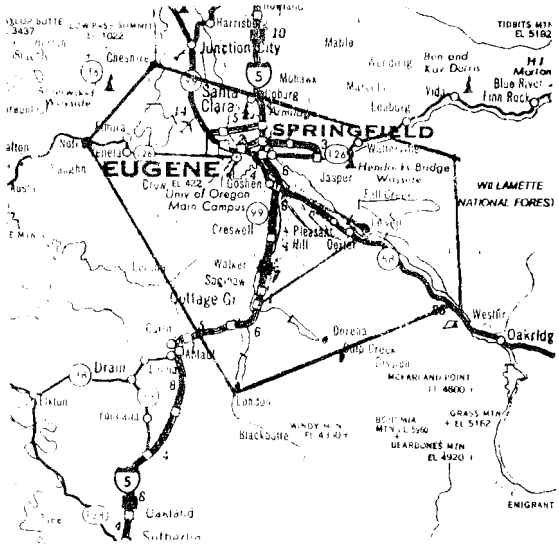
Eugene - Lowell - Cottage Grove Triangle - 9,000+ moths

New catches outside of Triangle

1. East side of Fall Creek Lake (RV)
2. North side of Lookout Point Lake (RV)
3. East side of Dorena Lake (RV)
4. South side of Cottage Grove Lake (RV)

The area enclosed within the outline includes all current 1984 trap finds in the greater Eugene infestation.

(RV) = recreational campground areas."



Infested area around Eugene, Oregon

JAPANESE BEETLE, Popillia japonica -(A)- Trap catches of this serious pest are probably over for this year in the infested areas of Sacramento County. We will now have to wait until next year to determine the success of this year's eradication effort. In the meantime, single beetles have been trapped in three other counties, and 15 beetles have been found during commercial aircraft inspections. The following report by John Pozzi summarizes the state beetle finds as of August 24.

Summary - 1984 Japanese Beetle Finds

County	-----Adults----- Trapped	Visual	Pupae	Larval/Pupal Properties	Airport Interceptions
Alameda	0	0	0	0	1
Los Angeles	1	0	0	0	8
Sacramento	23	37	8	1	0
San Mateo	1	0	0	0	6
Ventura	1	0	0	0	0
	26	37	8	1	15

As can be seen from the above chart, three beetles have been trapped outside the eradication zone in Sacramento County. The following reports by John Pozzi outline the individual finds:

"A Japanese beetle (JB) has been trapped this year in a second county. CDFA Inspectors Bill Herr and Marvin Souw discovered a female beetle on 7/19/84 in a JB trap at Los Angeles International Airport, Los Angeles County. The trap had been placed near an Agapanthus sp. JB trap density in the area was 25 traps per square mile.

A JB has been trapped for the first time this year at San Francisco International Airport, San Mateo County. CDFA Inspector Michael Saipaia discovered the beetle on 7/26/84 while servicing a JB trap that was placed along one of the airport's runways.

A JB was trapped for the first time this year in Ventura County. County Trapper Cindy Nielson found the female beetle on 8/22/84 while servicing a JB trap in Oxnard. The trap had been placed along Peninsula Road.

Since the beetle was very dry internally, CDFA Systematic Entomologist Fred Andrews could not determine if there had been egg development.

JB trap density in the area was two traps per square mile. Ventura County Department of Agriculture personnel are increasing that to protocol levels."

COTTON BOLL WEEVIL, Anthonomus grandis -(A)- The following report by Tom Palmer summarizes the California boll weevil situation:

"The Project trapping program has progressed smoothly throughout the State. Catches of boll weevil were very high in January in both Imperial and Riverside counties, and then tapered off after plowdown. By June, trap catches of boll weevil had dropped to nearly zero in all areas except the Bard/Winterhaven area of Imperial County.

Trap catch data for 1984 is as follows:

	-----BLYTHE------		-------BARD--------		----IMPERIAL-----	
Month	# Traps	Weevils Trapped	# Traps	Weevils Trapped	# Traps	Weevils Trapped
Jan.	813	602	387	2,610	400	312
Feb.	813	102	387	909	400	80
Mar.	813	77	387	373	400	43
Apr.	813	12	229	84	412	1
May	536	0	235	29	625	0
June	674	1	235	5	673	0
July	674	0	235	15	673	0
Aug.**	819	0	235	5**	673	0

**Through August 19, 1984.

The treatment program in 1984 has been confined to the Bard/Winterhaven area of Imperial County because of continued weevil finds. The inability to have a totally effective plowdown in this area was caused by a high water table due to flooding of the Colorado and Gila Rivers. This caused the soil to be too wet in some areas to allow the cotton to be harvested. In those fields where weevils were trapped, weevil control treatments commenced in late January. These winter treatments continued into March and included both applications of insecticides and herbicides to keep the cotton growth retarded and impede boll weevil populations. Winter treatments consisted of ULV applications of malathion (1 pint a.i./acre) and paraquat (1 quart/acre). Approximately 200 acres were treated at each application; five applications of malathion and two applications of paraquat were made during this two-month period.

Spring treatments commenced in the Bard/Winterhaven area in mid-May and consisted of four applications of Guthion 28 at the rate of 1/2 lb a.i./acre."

MINING SCALE, Howardia biclavis -(A)- Collected from a house plant (Ficus benjamina) at a residence in Palm Springs, Riverside County on July 25. The specimens were collected by Agricultural Biologist G. Sidhu and County Plant Pathologist H.S. Gill. The scale was identified by County Entomologist Eldon Reeves and confirmed in Sacramento. The following report by Allen Clark summarizes the find:

> "The house plant owner brought a dead branch of F. benjamina to the County Agricultural Commissioner's office. The branch was heavily infested with brown soft scale and also hosted a few mining scale. The owner claimed to have purchased the plant from a Palm Springs Smith Food King Market in mid-December, 1983. Sidhu and Gill visited the owner's residence and found the plant in an enclosed patio. The plant was destroyed.
>
> Mining scale is commonly found on plants from Florida where it infests a wide host range of ornamental and crop plants. This scale is partly mining in habit; it is often covered by the outer layers of the host's bark so that only a bump is visible.
>
> This particular shipment has been tentatively traced with the help of the brokers involved. A nursery in California apparently ordered 24-10" F. benjamina plants from Florida and immediately shipped them out to nursery plant brokers. The California nursery has been found clean by county biologists.
>
> Due to the length of time between the introduction of the infested plants into California and the interception by Sidhu and Gill, the remainder of the shipment is well dispersed to private owners and not traceable."

The following data concerning mining scale may be of use to field personnel:

Field Characteristics: Scale cover approximately circular, moderately convex, thick, white, grey or yellowish, 2-2.5 mm in diameter. Exuviae submarginal, light brown. Body color whitish. Male scales absent.

Hosts: Very polyphagous. It is known to attack over 200 plant species. It is encountered in quarantine most commonly on Ficus benjamina and plumeria logs.

Biology: Found on leaves, bark and fruit but prefers bark. Usually found beneath the loose layers and is often totally covered by these bark layers.

Distribution: DC, FL, KS, MD, MI, OH, PA.

Economic Importance: Considered an economic pest of woody ornamentals in Florida despite being highly parasitized.

NEW STATE RECORDS

Two new arthropod species were recently found for the first time in California and are also new North American records as well. One is the pepper tree psyllid, Calophya schini, covered in the following article, and the eriophyid mite Acalitus calycophthirus, which is discussed in the article by T. Kono and E.W. Baker.

PEPPERTREE PSYLLID, Calophya schini -(Q)- The finding of a population of this psyllid established in Los Angeles County constitutes a new California and North America record. The first specimens were collected by a homeowner in Long Beach, Los Angeles County on July 18. However, the specimens were submitted to the Orange County Agricultural Commissioner's office, where Entomologist Dave Byers recognized them as something new. That evening, Dave checked pepper trees near his home in Fullerton, Orange County and found the same species.

Specimens sent to the insect taxonomy laboratory in Sacramento were identified as probably Calophya schini Tuthill. The identification was confirmed by D.R. Miller and Louise Russell at the USDA Insect Identification Institute at Beltsville, Maryland.

The Psyllid is native to Peru, which is also the native home of the host, the California pepper tree, Schinus molle. There are a number of psyllids there in the genus Calophya which are known to attack the California pepper tree and the closely related Brazilian pepper, Schinus terebinthifolius. Most cause the small, oval, pit-like distortions in the leaves of the host that are so characteristic of the new species in California.

Calophya schini, so far, is known to attack only the California pepper. Dave Byers could not find evidence of it on Brazilian pepper trees in the same neighborhood where California pepper trees were moderately infested. Most species of New World Calophya are restricted to plants in the plant family Anacardiaceae, which includes the common California plant genus Rhus and the commercial pistachio nut. Current indications are that most of the species may be rather host specific even within the same plant genus, and there should not be much concern at this point that the new psyllid may move on to pistachio.

Feeding by the nymphs apparently causes the formation of the pit gall, usually on the lower leaf surfaces, although the upper leaf surfaces, leaf petioles and small green twigs may also be affected. The dorsal surface of the nymphs is flat and the lower surface is convex, so that the nymphal body fits nicely into the pit and leaves only the flat dorsal surface exposed.

Adults of pepper tree psyllid are light tan, much the same color and size as the adults of acacia psyllid. However, pepper tree psyllid does not have the brown clouding (fumation) of the wing tips that is found in acacia psyllid. Also the genal cones on the face are narrow and acutely pointed in schini (see illustration of front of head) and broad and evenly rounded in the acacia psyllid.

The known range of this psyllid in California now includes the towns of Long Beach and Torrance in Los Angeles County and Fullerton, Brea and Seal Beach in Orange County.

Photographs & Illustrations
of Calophya schini

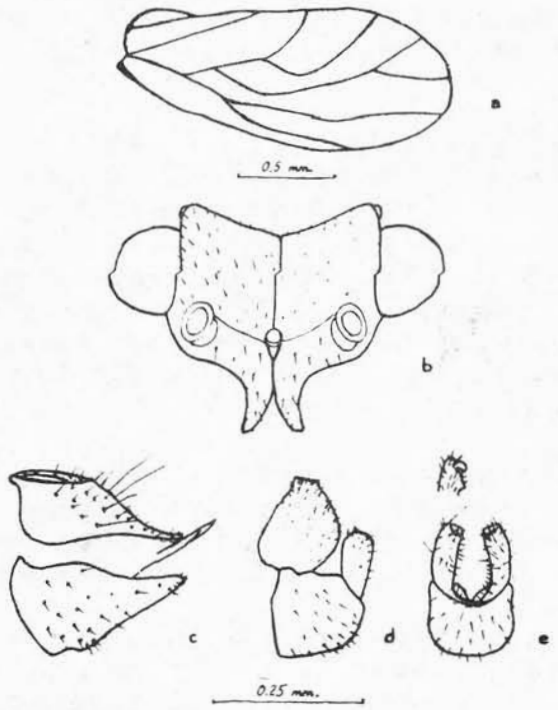


Fig. 1 Morphology of adults of calophya schini: a, forewing; b, frontal view of head; c, female genital segments in lateral view; d, male genital segments in lateral view; e, male genital segments in posterior view.

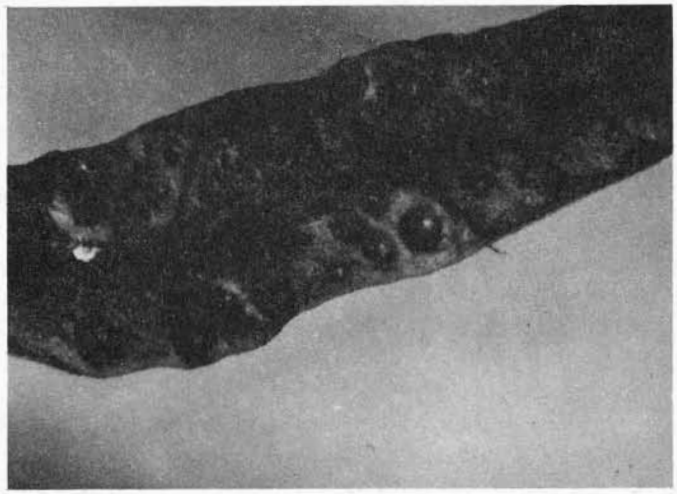


Fig. 2 Pepper tree psyllid injury to leaf.

Fig. 3 Psyllid injury to leaves, midribs, and petioles.

Fig. 4 Psyllid injury and late stage nymph.

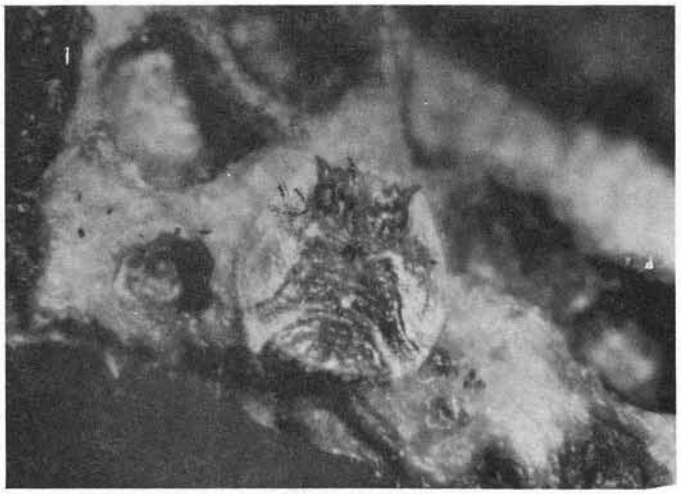


Fig. 5 Close-up of nymph.

A NOTE ON ACALITUS CALYCOPHTHIRUS (NALEPA) AN ERIOPHYID MITE NEW TO CALIFORNIA (ACARI: ERIOPHYIDAE)

Tokuwo Kono[1] and Edward W. Baker[2]

Samples of witches' broom from a birch tree (Betula pendula = B. verrucosa), the European white or silver birch[3], were submitted to the senior author for identification of the causative agent by Henry C. Starr of Carmichael, California, on February 2, 1984 (84B3-12). According to Mr. Starr, one of six birch trees in his front yard is a profusion of witches' broom (Fig. 1). The only organisms associated with the potential for causing witches' broom were mites belonging to the family Eriophyidae. These mites were found in spotty colonies between the bud clusters, and were identified as Acalitus rudis (Canestrini, 1890)[4]. Subsequent studies showed that these mites were Acalitus calycophthirus (Nalepa, 1891) (=Eriophyes rudis calycophthirus Nalepa). It was first noted by Nalepa (1891) that this mite caused bud deformation and witches' broom of birch trees in Europe. The infestation in California is the first record in this country.

The birch trees in the Starr yard were examined by James Smith (Plant Pathologist CDFA) and the senior author on February 8 and May 29. The trees were dormant in February and one infested tree was found displaying witches' broom (Fig. 1). It was the only tree in the area infested with eriophyid mites and witches' brooming. On May 29 the leaves masked the infestation. However, the leaves appeared darker green and the internodes on the new growth were shorter than those of healthy trees.

The mites are cylindrical and white (Fig. 2). The females collected February 2 and 8 are 150 to 170 microns long (avg. 156 microns), and those collected May 29 are 213 to 248 microns long (avg. 237 microns). The median and admedian lines of the shield are distinct (Fig. 3). The tips of the microtubercles on the body rings are rounded (Fig. 4). The surface of the female genital flap is tuberculate, very pronounced at the base of the flap, and with a line on each side of the coverflap parallel to the lip (Fig. 5). The featherclaw is four-rayed (Fig. 6).

Nothing is known of the life cycle of this mite.

---

1 Tokuwo Kono, Analysis and Identification Unit, Entomology Laboratory, California Department of Food and Agriculture, Sacramento, California 95814.

2 Edward W. Baker, Systematic Entomology Laboratory, Insect Identification and Beneficial Insect Introduction Institute, USDA, Beltsville, Maryland 20705.

3 Douglas G. Barbe (Botanist, CDFA).

4 Marissa Castagnoli, Instituto Sperimentale Zoologia Agraria, Florence, Italy, confirmed the identification.

References Cited

Canestrini, G. 1890. Atti. Soc. Veneto-Trent. Sci. Nat. 12:51, 18.

Nalepa, A. 1891. New Gall milben. Nova Acta 55(6):363.

Fig. 1. Photograph of birch trees, normal on left and with witches´ broom on right.

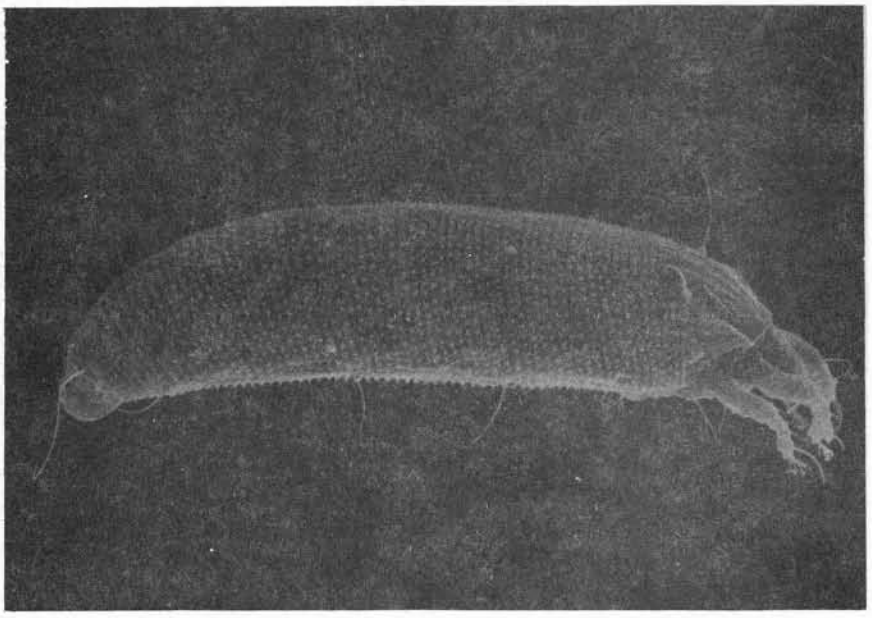


Fig. 2. Scanning electron micrograph of Acalitus calycophthirus female.

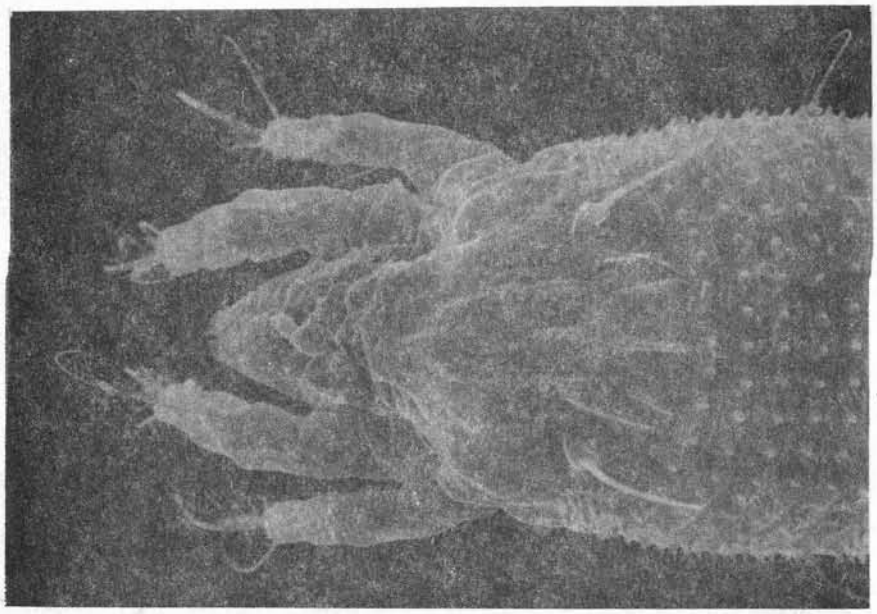


Fig. 3. Scanning electron micrograph of Acalitus calycophthirus female, shield.

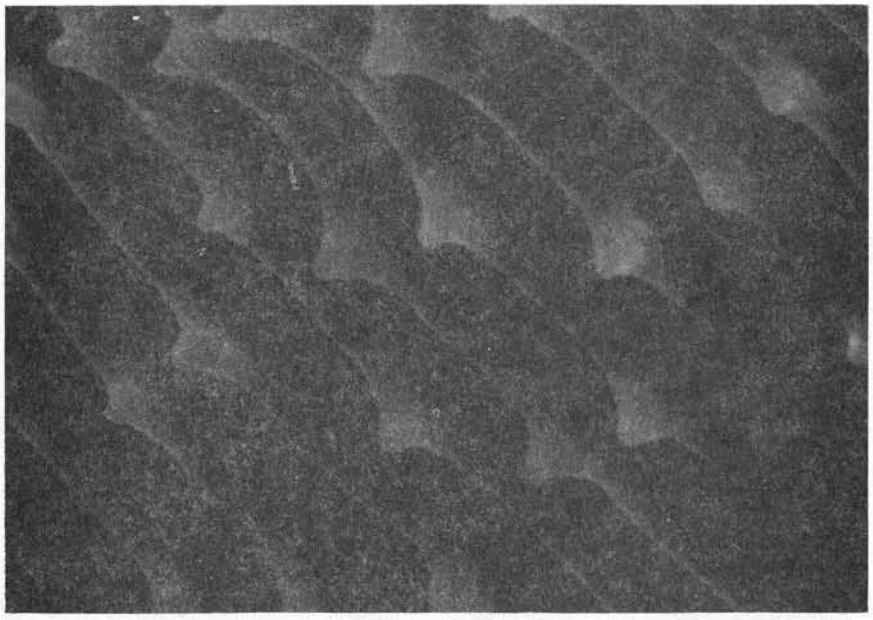


Fig. 4. Scanning electron micrograph of Acalitus calycophthirus female, microtubercles on body rings.

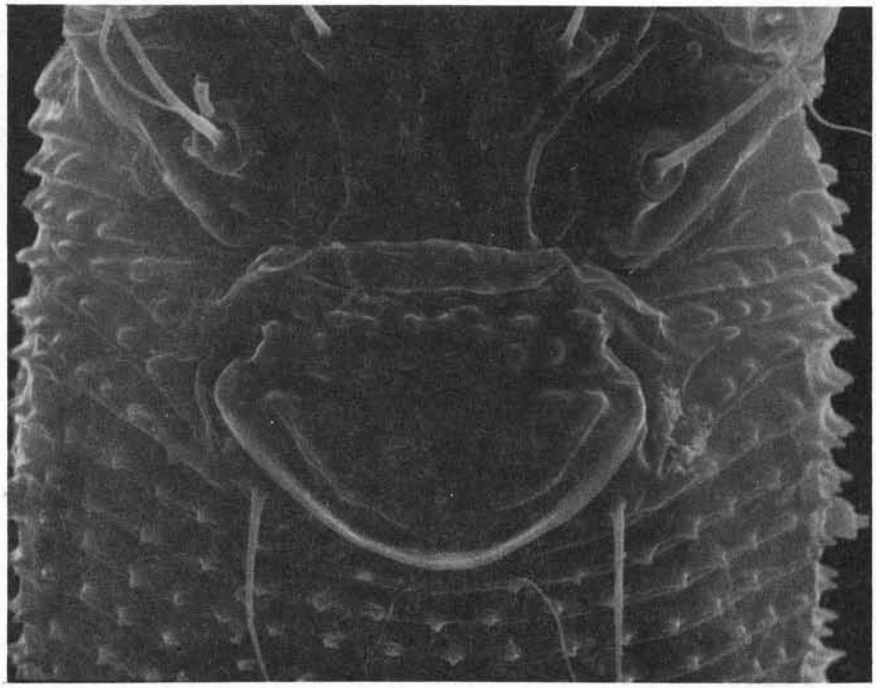


Fig. 5. Scanning electron micrograph of Acalitus calycophthirus female, genital coverflap.

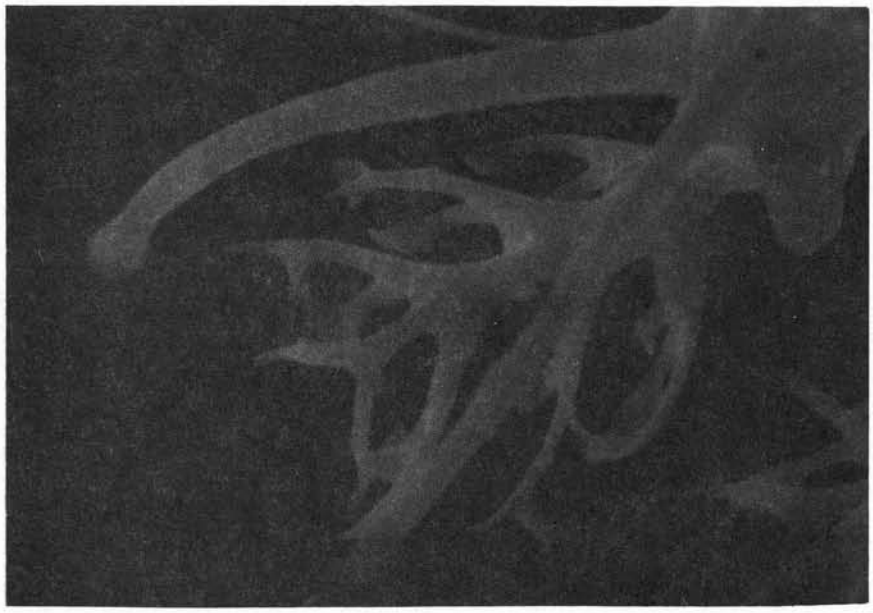


Fig. 6. Scanning electron micrograph of Acalitus calycophthirus female, featherclaw.

SCIENTIFIC NOTE

Name change for the obscure mealybug.

This common mealybug, formerly known as Pseudococcus obscurus Essig, 1901, has been found to be a junior synonym of the mealybug Pseudococcus affinis (Maskell), 1894, originally described from Australia.

This means that we will now be using the scientific name Pseudococcus affinis instead of the name Pseudococcus obscurus. We will still use the common name "obscure mealybug" for this species until such time as the ESA Committee on Insect Common Names decides that the name should be changed.

Those of you who frequently use the Color Field Key for the California Mealybugs or McKenzie's Mealybugs of California may want to note this change.

QUARANTINE & EXCLUSION

GYPSY MOTH, Lymantria dispar -(A)- Many inspections of quarantine material have been made this summer for the presence of gypsy moth by county personnel associated with the gypsy moth referral program. However, since our filing is way behind because of the large numbers of gypsy moth and fruit fly samples received in the taxonomy lab this summer, we can only list a few of these collections. Gypsy moth early life stages were found on outdoor furniture, tools and firewood from New Hampshire, New Jersey and New York. Collectors were C. Montgomery, Marin County; C. Rasmussen, Sacramento County and B. Curtner, Alameda County.

Japanese beetle aircraft survey - Every summer during the flight period of the Japanese beetle on the east coast, California conducts a detection program of commercial aircraft landing at airports throughout the state. While 15 Japanese beetles were found on incoming aircraft this year, the following "A" or "Q" rated pests were also recovered:

Two-lined spittle bug	Prosapia bicincta	2
A scarab beetle	Phyllophaga sp.	8
Oriental beetle	Anomala orientalis	5
Asiatic garden beetle	Maladera castanea	2
European chafer	Rhizotrogis majalis	4
A scarab beetle	Serica sp.	2
Chinese rose beetle	Adoretes sinica	2
A scarab beetle	Anomala oblivia?	1
A tent caterpillar	Malacosoma sp.	1

The following A,B, and Q pests have been intercepted in Quarantine between June 25 and July 18

Rating	Species	Common Name	Date	Origin	County	Host	Collector
A	Pulvinaria psidii	green shield scale	7/02	FL	SJ	Ficus	Hudson
			7/05	HI	SM	flowers	Buerer
			7/11	HI	SD	ginger	Ginsky
A	Pinnaspis strachani	lesser snow scale	7/05	HI	SF	Helconia	Rios
			7/13	HI	STB	-	Pitchard
Q	Pinnaspis buxi	boxwood scale	6/28	HI	V	Bird of paradise	VanEpp
			7/13	HI	V	Anthurium	"
Q	Aspidiotus excisus	Aglaonema scale	7/02	FL	SJ	Aglaonema	Hudson
			7/11	Puerto Rico	V	"	VanEpp
A	Pseudaulacaspis cockerelli	magnolia white scale	7/12	HI	ALP	cut leaves	Willson
Q	Coccus acutissimus	acuminate scale	7/06	China	ALA	litchee	Brown
Q	Pseudaonidia trilobitiformis	trilobed scale	7/06	China	ALA	litchee	Brown
Q	Unaspis yanonensis	yanon scale	7/06	China	ALA	litchee	Brown
A	Ceroplastes rubens	red wax scale	6/25	HI	STCZ	flowers	Bergman
A	Ischnaspis longirostris	black thread scale	7/05	HI	SM	Monstera	Buerer
Q	Crenidorsum sp. undescribed	a whitefly	7/05	HI	SM	Monstera	Buerer
Q	Thysanofiorinia leei	an armored scale	7/06	China	ALA	litchee	Brown
Q	Aleurodicus dispersus	spiraling whitefly	7/05	HI	SJ	Aglaonema	Frieders
			7/09	HI	SJ	Anthurium	Willson
A	Siphanta acuta	torpedo bug	6/27	HI	V	Protea, Anthurium, Dracaena	VanEpp
			7/13	HI	V	Anthurium; foliage	Van Epp
Q	Lepidosaphes sp. nr. chinensis	an armored scale	7/01	Taiwan	SF	litchee	Brown
Q	Aleurotulus sp.	a whitefly	6/29	HI	H	Anthurium; cut flowers	Spadoni
Q	nr. Lithocolletis sp.	a leafblotch miner	7/06	China	ALA	litchee	Brown
A	Leptinotarsa decemlineata	Colorado potato beetle	7/18	OR	STN	barley	Sweeney/ Fahey
Q	Phyllophaga sp.	a scarab beetle	7/02	-	SD	harbor police office	Jemenez
Q	Protaetia fusca	a scarab beetle	7/05	HI	ALA	automobile	Brown
			7/12	-	ALA	"	Brown
Q	Tapinoma melanocephalum	blackheaded ant	7/06	HI	LA	ginger	Smice
B	Bradybaena similaris	a snail	7/02	FL	SJ	Brassia	Hudson
			7/06	HI	ALA	automobile	Brown
Q	Pentatomidae	a true bug	7/12	HI	ALA	"	Brown
Q	pseudococcidae (nymph)	a mealybug	7/01	Taiwan	SF	litchee	Brown
Q	Pheidole megacephala	bigheaded ant	7/18	HI	SD	flowers	Ginsky

BORDER STATION INTERCEPTIONS

In keeping with our comments in the last issue about saluting the fine job of our border station inspectors, we will single out one or two people for a job well done. The winner this issue is Glenn Raye of the Blythe Inspection Station. See the following report by Dick Brown.

"New Host - Living larvae of Caribbean fruit fly, Anastrepha suspensa, were found in homegrown KIWI, apparently from Broward County, Florida. The third instar larvae were found in each of 5 or 6 fruits taken from a Florida licensed van. This is the first time (that we know of) that this pest has been found in kiwi fruit. We plan to add kiwi to the host list of Caribfly.

BL Glenn Raye FL to Los Angeles Kiwi 8/06

Blueberry Maggot - Rhagoletis mendax, live larvae, were found in blueberries from a Virginia auto:

BL Glenn Raye VA to Los Angeles Blueberries 8/03

Personnel Cameo - Glenn Raye, a seasonal employee first hired at Blythe on 2/1/84, has distinguished himself as a "fruit fly finder." Not only did he find the two listed above, but was also credited with the Mexfly confirmation from a mango interception (from El Paso, TX) on July 2, 1984. Outstanding job, Glenn."

BORDER STATION INTERCEPTIONS
(Through August 26, 1984)

APPLE MAGGOT	(Rhagoletis pomonella)	-A-	12
AN ANT	(Paratrechina sp.)	-Q-	5
A CARPENTER ANT	(Camponotus sp.)	-Q-	1
A TENT CATERPILLAR	(Malacosoma sp.)	-Q-	41
GYPSY MOTH	(Lymantria dispar)	-A-	121
WESTERN CHERRY FRUIT FLY	(Rhagoletis indifferens)	-A-	489
CALIFORNIA RED SCALE	(Aonidiella aurantii)	-B-	7
BEAN LEAF BEETLE	(Cerotoma trifurcata)	-Q-	2
COLORADO POTATO BEETLE	(Leptinotarsa decemlineata)	-A-	5
A WOOLLYBEAR CATERPILLAR	(Arctiidae)	-Q-	15
EASTERN TENT CATERPILLAR	(Malacosoma americanum)	-Q-	13
PURPLE SCALE	(Lepidosaphes beckii)	-B-	3
A NOCTUID MOTH	(Noctuidae)	-Q-	6
HICKORY SHUCKWORM	(Cydia caryana)	-A-	14
A PLANTHOPPER NYMPH	(Fulgoroidea)	-Q-	1
PECAN WEEVIL	(Curculio caryae)	-A-	9
A WEEVIL	(Curculionidae)	-A-	23
A WEEVIL	(Conotrachelus sp.)	-A-	21
WHITE PEACH SCALE	(Pseudaulacaspis pentagona)	-Q-	1
A BAGWORM	(Fumaria casta)	-Q-	1
A LEAF MINER	(Gracillariidae)	-Q-	1
A RIBBED COCOON-MAKER	(Bucculatrix sp.)	-Q-	1
A LEAF ROLLER	(Tortricidae)	-Q-	5
AN OLETHREUTINE MOTH	(Olethreutinae)	-Q-	2
BLACK THREAD SCALE	(Ischnaspis longirostris)	-A-	1
IMPORTED FIRE ANT	(Solenopsis invicta)	-A-	4
MEXICAN FRUIT FLY	(Anastrepha ludens)	-A-	1
A WEEVIL	(Menoetus floridanus)	-Q-	1
PALLID COCKROACH	(Leurolestes pallidus)	-Q-	1
PLUM CURCULIO	(Conotrachelus nanuphor)	-A-	1
ORIENTAL SCALE	(Aonidiella orientalis)	-Q-	2
CHAFF SCALE	(Parlatoria pergandii)	-B-	6
A BAGWORM	(Psychidae)	-Q-	10
A TIGER MOTH	(Arctiidae)	-Q-	5
A SNAIL	(Subulina octona)	-B-	1
A WEEVIL	(Coccotorus scutellaris)	-A-	2
A TORTRICID MOTH	(Grapholitha sp.)	-Q-	1
LUNA MOTH	(Actias luna)	-Q-	1
MAGNOLIA WHITE SCALE	(Pseudaulacaspis cockerelli)	-A-	2
AN ANT	(Pheidole sp.)	-Q-	1
AN UNDERWING MOTH	(Catocala sp.)	-Q-	1
A PYRALID MOTH	(Pyralidae)	-Q-	3
JAPANESE BEETLE	(Popillia japonica)	-Q-	1
A SNAIL	(poss. Lamellaxis sp.)	-B-	1
A WHITEFLY	(Tetraleurodes ursorum)	-Q-	1
A GELECHIID MOTH	(Gelechiidae)	-Q-	1
AN OLETHREUTINE MOTH	(Rhyacionia sp.?)	-Q-	1
FLORIDANA	(Lindingaspis floridana)	-Q-	1
EUROPEAN CORN BORER	(Ostrinia nubilalis)	-A-	2
AN EASTERN TUSSOCK MOTH	(Orgyia sp.)	-Q-	2
AN ARMYWORM	(?Euxoa sp.)	-Q-	1
LITTLE FIRE ANT	(Ochetomyrmex auropunctata)	-Q-	3
AN ARMYWORM	(Spodoptera sp.)	-Q-	1

A LEAF ROLLER	(*Acleris* sp.)	-Q-	1
BLUEBERRY MAGGOT	(*Rhagoletis mendax*)	-A-	1
CARIBBEAN FRUIT FLY	(*Anastrepha ludens*)	-A-	1
WHITE-MARKED TUSSOCK MOTH	(*Orgyia leucostigma*)	-Q-	2
COCONUT SCALE	(*Aspidiotus destructor*)	-A-	1
A SPURTHROAT GRASSHOPPER	(*Melanoplus* sp.)	-Q-	1
CHERRY FRUIT FLY	(*Rhagoletis cingulata*)	-A-	1
A SNAIL	(*Bradybaena similaris*)	-B-	2
A GEOMETRID MOTH	(Geometridae)	-Q-	1
A CECIDOMYIID WASP (GALL)	(*Caryomyia* sp.)	-Q-	1
FIRE ANT	(*Solenopsis geminata*)	-Q-	1